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A61F 13/15

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WO 96/00546 A1 WO 94/27542 A1 US 4900320 A

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(54) An absorbent article

(57) A sanitary napkin, a pantyliner or a protector for light incontinent people, intended to be worn in the crotch part inside a pair of underpants, having two long sides 2 and 3 and two short sides 4 and 5, comprising an elongated absorption body 6 and flexible flaps 9 and 10 on the long sides formed of a separate piece of material 11 applied on the side of the elongated absorption body which is intended to face away from the user. The piece of material comprises a layer of liquid-impermeable material and may include a layer of an absorbent material. The napkin may also include leakage barriers comprised of compressions, fused fibres in the covering or absorbing layers, water insoluble adhesive, super-absorbent material, or slits arranged longitudinally or transversely.

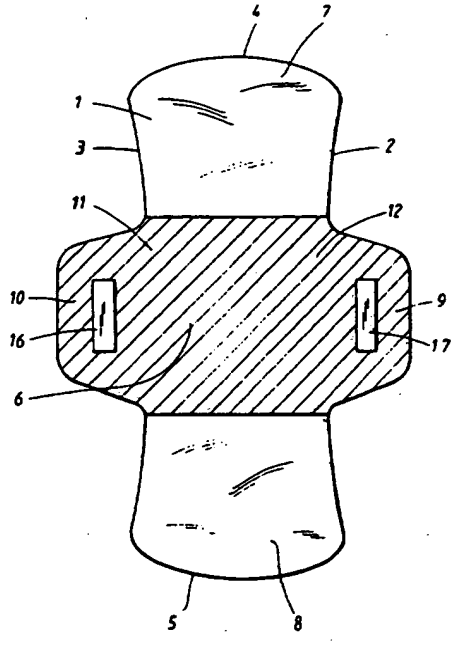

FIG. 2

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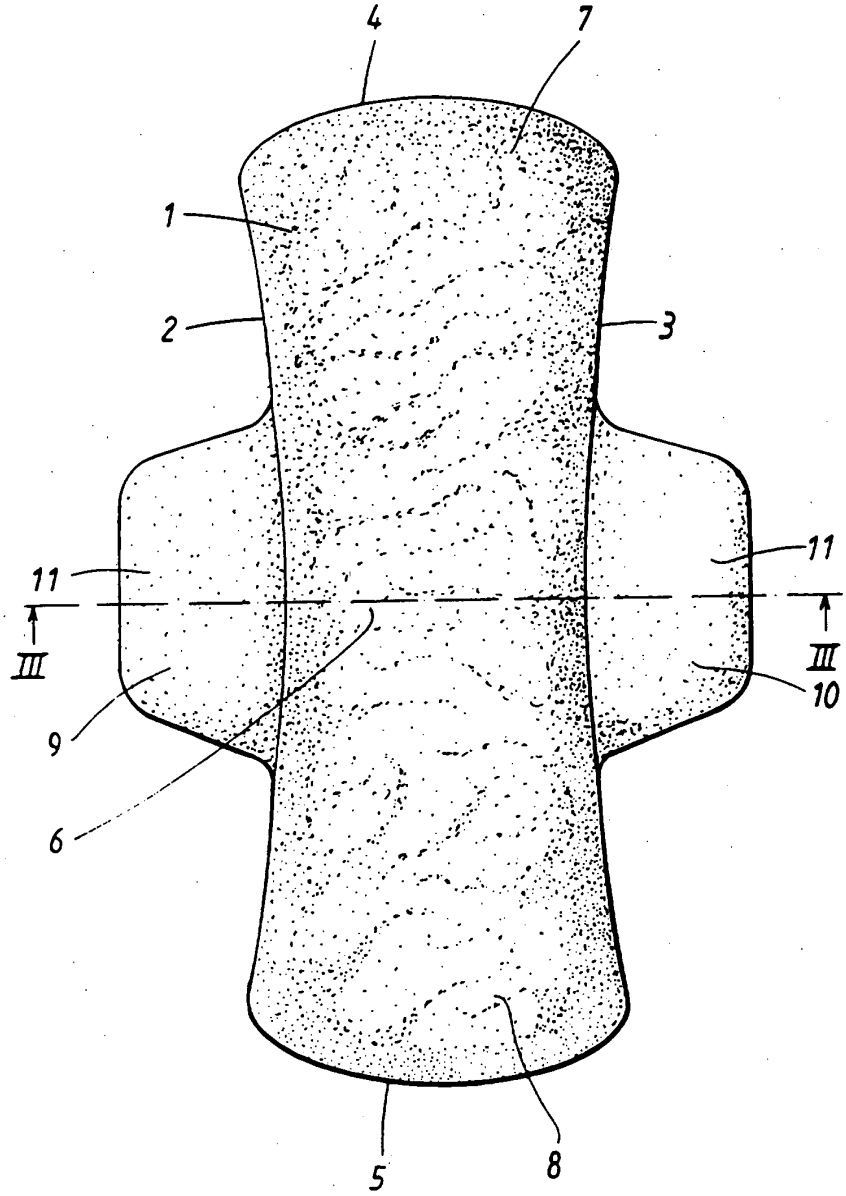

FIG. 1

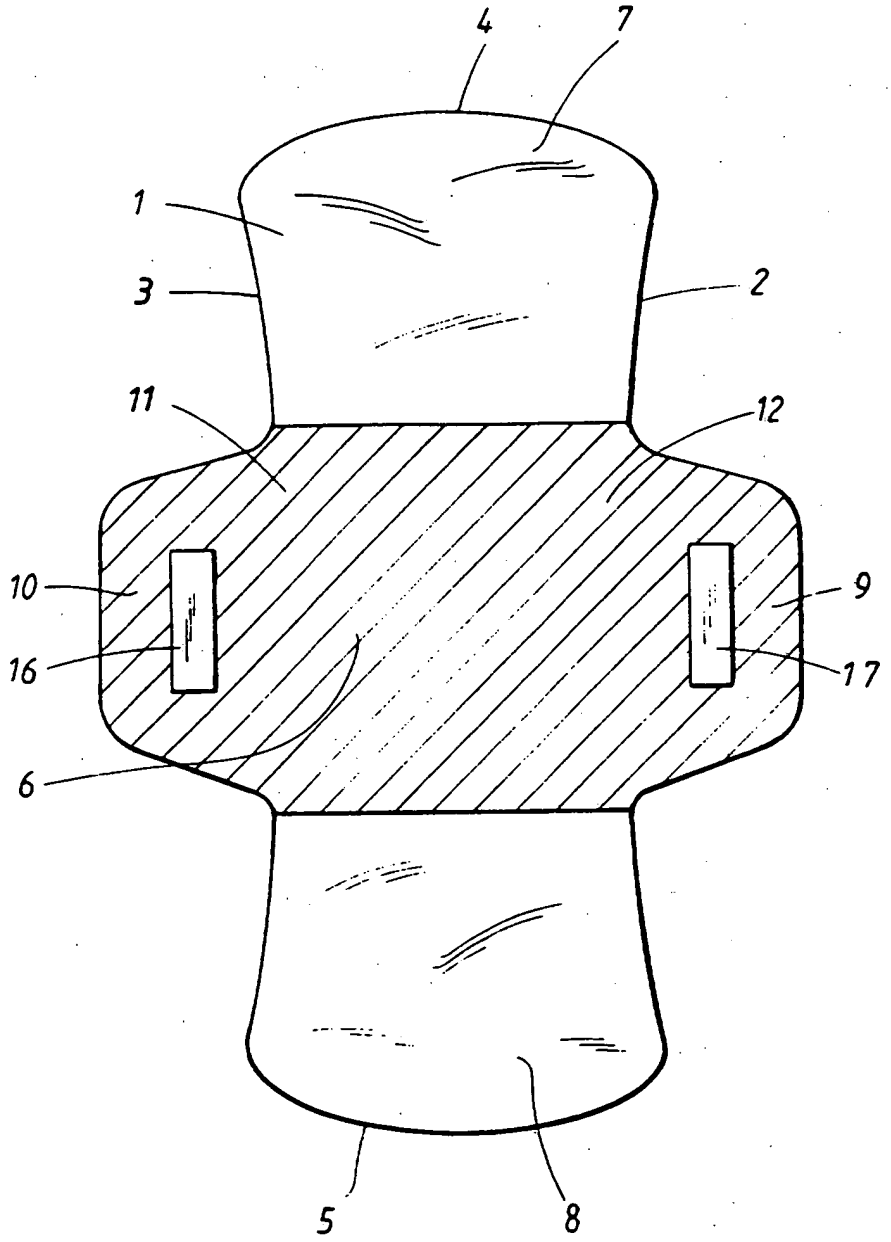

FIG. 2

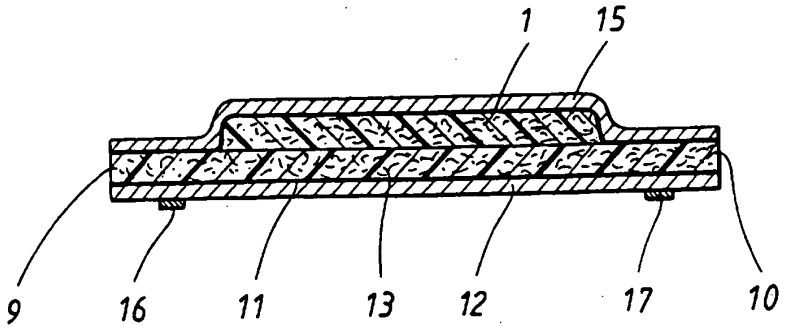

FIG.3

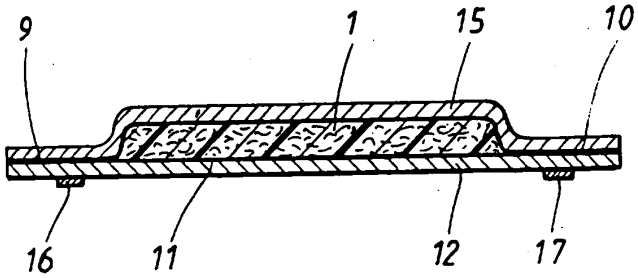

FIG.4

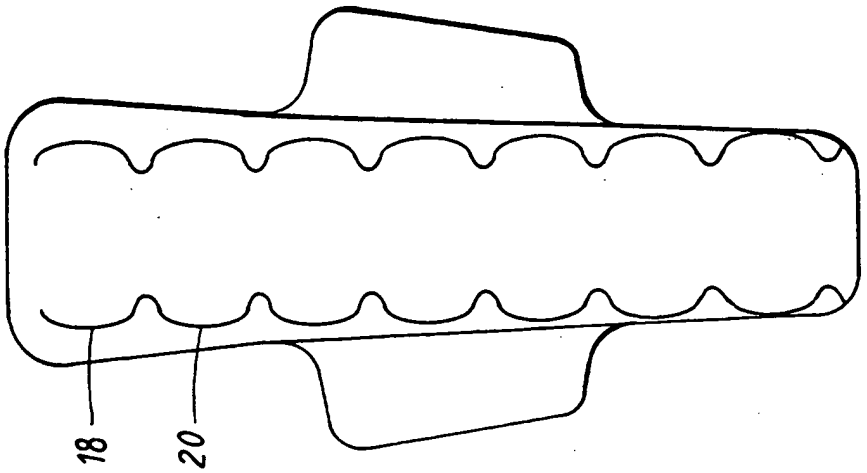

FIG.7

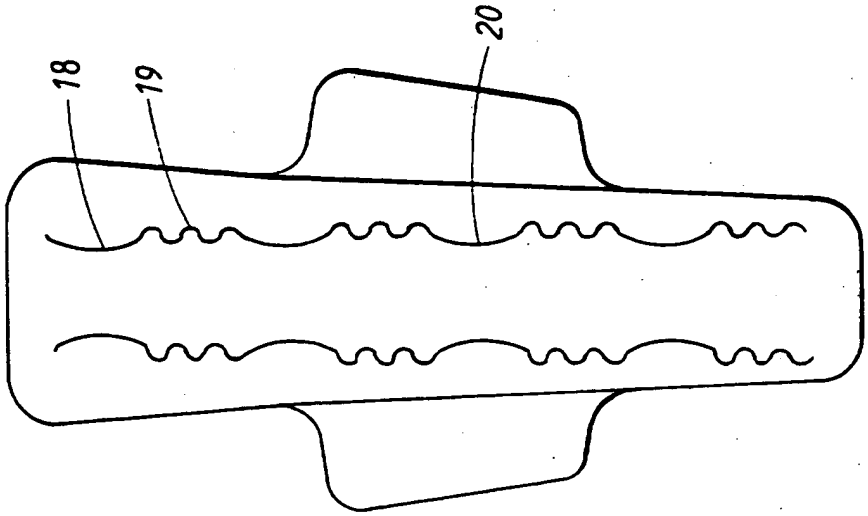

FIG.6

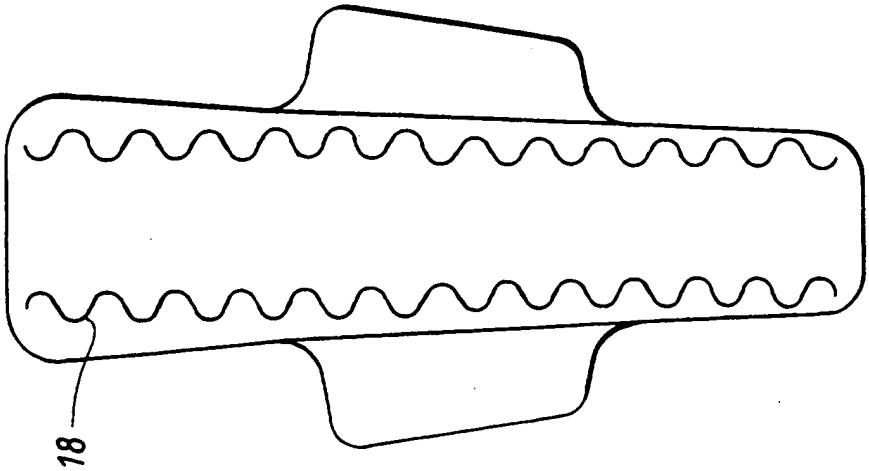

FIG.5

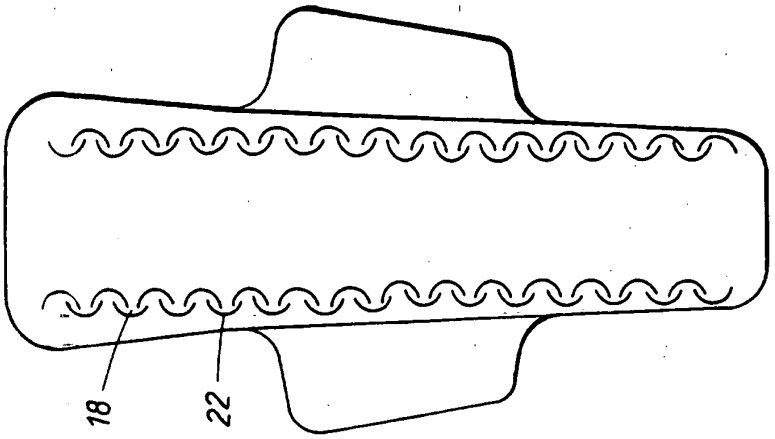

FIG.10

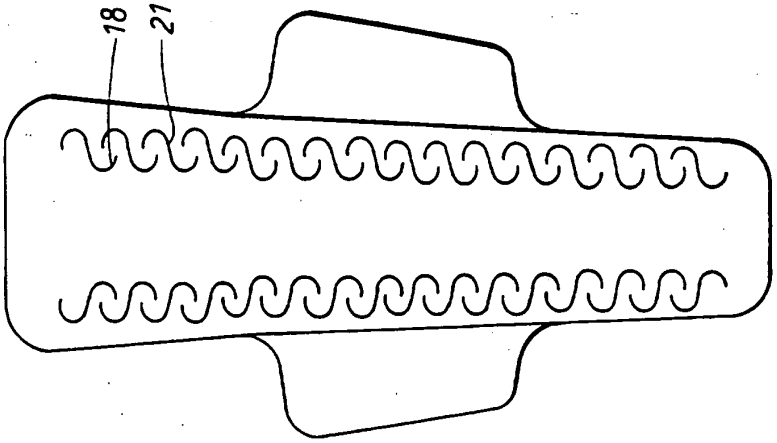

FIG.9

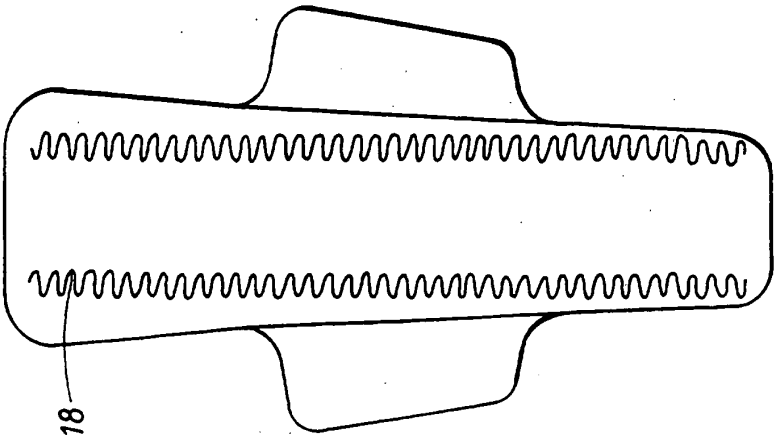

FIG.8

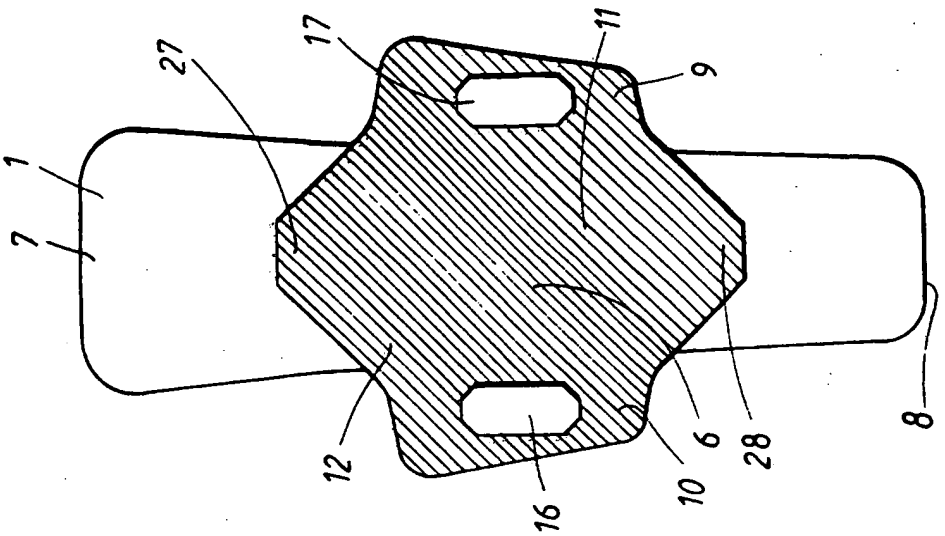

FIG.13

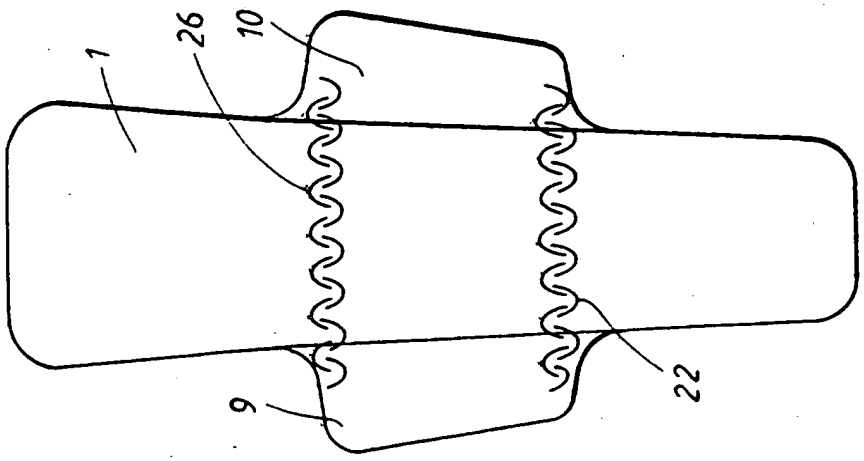

FIG.12

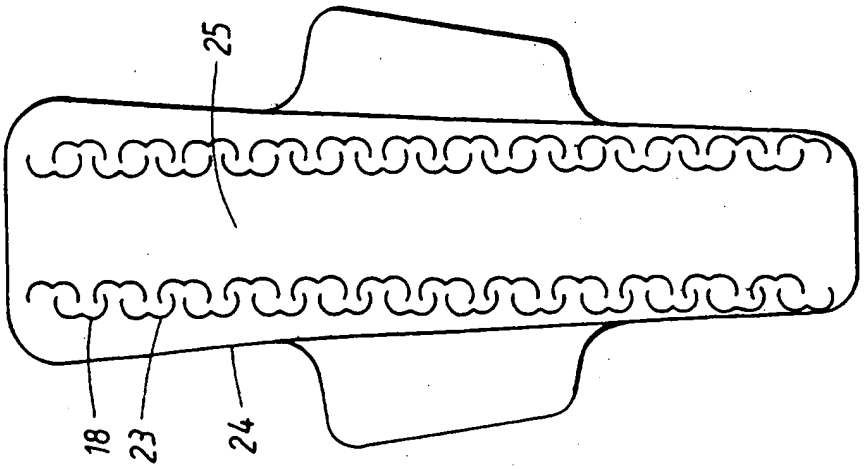

FIG.11

Absorbent product, such as a sanitary napkin, an incontinence protector, a pantyliner or the like

TECHNICAL AREA:

The invention refers to an absorbent product, such as a sanitary napkin, a pantyliner or a protector for light incontinent people, intended to be worn in the crotch part inside a pair of underpants, which product has essentially elongated shape and has two long sides, two short sides, two end parts and a centre part lying between the end parts and comprising an elongated absorption body and a flexible side flap arranged at each of the long sides of the product, which side flaps during use are intended to be applied around the leg edges of the underpants.

BACKGROUND OF THE INVENTION:

Absorbent products of the type intended here are used when the requirement for absorption capacity is relatively small. Pantyliners and mini-napkins are thereby used at the end of the menstruation period when the flow is smaller, or between menstruations in order to collect any possible discharges. Protectors for light incontinent people can be used more or less continually as necessary. People who suffer from light incontinence only leak occasional drops of urine but have in general control over the emptying of the bladder. Light incontinence is, for example, so-called drop incontinence which occurs when the incontinent, usually a man, has difficulties with completely emptying the urethra after urinating. Another type of light incontinence, which is usual among women, can occur through physical exertion, e.g. during running, jumping, coughing or sneezing.

For these categories of users, where there is no requirement for a large absorption capacity, other product requirements such as user comfort and a discrete shape will

be able to be complied with to a greater extent than with products intended to absorb a relatively large liquid quantity.

An absorbent product, such as a sanitary napkin, an incontinence protector or a pantyliner usually comprises a liquid-permeable surface layer, a liquid-impermeable barrier layer and an absorption body arranged therebetween. The surface layer is arranged on the side of the absorbent product which during use is intended to be facing towards the body of the user and the barrier layer is applied on the side of the absorbent product which during use is intended to be facing away from the body of the user.

Sanitary napkins, pantyliners and incontinence protectors are usually attached to the crotch of the underpants of the user with the help of adhesive applied in rows or other patterns on the barrier layer on the back side of the product. In order to protect the surfaces provided with adhesive during storage and transport these are covered before use by a release agent-treated protective tape which is removed by the user when the absorption product is applied to the underpants.

In order for the absorption product to be removable from the underpants the adhesion of the adhesive should be balanced against its releasability. This means that the user may experience a problem in that the product during use becomes detached from the underwear either partially or completely. Even if the product only comes partially detached it will in all likelihood become wrinkled. As a consequence of this, leakage of body fluid can occur, particularly on the edges of the underclothes.

In order to solve this problem it is known to provide the absorbent product with side flaps extending out from its

long sides. Such side flaps are intended to be folded around the edges of the underpants of the user and fastened on the outside thereof, usually with the help of adhesive applied on the back side of the flaps. In this way the flaps reduce leakage of body fluids out onto the underpants partially by in themselves physically protecting the edges of the underpants, partially through insuring a better fastening of the product in the underpants. Fastening flaps of this type are described in, for instance, SE 455 668, US 4 285 343, EP 130 848, EP 134 086 and US 4 608 047.

Another problem with the type of product which the invention concerns is that it can be felt by the user as being airtight and sweaty. This is a consequence of the, as described above, side of the product which during use faces away from the body of the user being equipped with a liquid-impermeable layer in order to prevent leakage through the product.

A number of different attempts to solve the problem by forming an absorbent product which is leakproof but at the same time airy and comfortable have been made earlier. In EP 104 906, for instance, a pantyliner is described having a barrier layer of a material which is waterproof but vapour-permeable. Materials with this property are however expensive to manufacture and it is difficult to give them a textile-like surface structure. The latter means that the user can still perceive the article as airtight and sweaty. An alternative solution described in US 4 681 578 is to shape the barrier layer so that it only covers a longitudinal centre part of the back side of the product. The barrier layer covers the whole length of the pantyliner but leaves the longitudinal edge parts free. A major disadvantage with this solution is that in this manner parts of the centre part of the napkin, i.e. the middle

third of the napkin which is intended to receive the main part of the liquid emitted by the user, does not have a liquid barrier back side. This increases dramatically the leakage risk for such napkins.

THE OBJECT OF THE INVENTION:

The object of the invention is to remedy the above problems and produce an absorbent product for small liquid flows which can be securely fastened in the underwear of the user and which has a liquid-impermeable back side in the region of the product where this is required. Through the achievement of this an absorbent product is obtained which has a high security against leakage but still feels airy and comfortable to wear.

Another object of the invention is to produce an absorbent product which has the absorption material distributed so that more absorption material is available where it is needed.

SHORT DESCRIPTION OF THE INVENTION:

A product of the type described in the introduction, in which the problems associated with prior art products of the same type is essentially avoided, is distinguished according to the invention by the side flaps being formed of a separate piece of material which extends transversally over the absorption body at the centre part of the product and extends out from the long sides of the absorption body on both sides of the absorption body whereby the separate piece of material comprises at least one liquid-impermeable barrier layer applied to the side of the piece of material which is facing away from the absorption body of the product.

According to an alternative embodiment of the invention it is further characterized by the piece of material

comprising a layer of absorbent material applied to the side of the piece of material which is facing towards the absorption body.

The surfaces of the product which are not covered by the liquid-impermeable layer on the separate piece of material can be at least partially covered by a liquid-permeable layer of material. Such a liquid-permeable layer of material can in this way on the one hand form a liquid-permeable surface layer on the side of the product which during use is intended to be facing towards the user, on the other hand form a surface layer on the opposite side of the product intended during use to be facing away from the user. In the latter case the liquid-permeable surface layer may be applied only over the parts of the absorption body which are not covered by the liquid-impermeable layer on the separate piece of material, or it can extend over the whole of the surface of the absorption body. Thereby, such a liquid-permeable layer can either be applied between the separate piece of material and the absorption body of the product or it can be applied outside the separate piece of material. It can be an advantage to arrange the liquid-permeable layer outside the separate piece of material because the back side of the product, i.e. the side which during use is facing away from the user, in this manner displays a unitary, aesthetically attractive surface. A soft, skin-friendly, textile or textile-like material such as nonwoven or the like is advantageously chosen for such a surface layer.

On the long sides of the elongated absorption body the product can further have side leakage barriers formed by longitudinal compressions, fused-together fibres in the absorption body or covering layer, liquid-insoluble glue applied between the side flaps and the absorption body, superabsorbent material mixed in the longitudinal edge

parts of the absorption body or slits arranged in the side edges of the absorption material.

Leakage barriers can further be arranged across the longitudinal direction of the product between its centre part and its end parts, in order to limit wicking in the longitudinal direction. The transverse leakage barriers, i.e. those arranged across the longitudinal direction of the product, can suitably be made in the same way as described above for the side leakage barriers, through compressions, fused fibres in the covering material or absorption body, water-insoluble glue, superabsorbent material or slits.

DESCRIPTION OF THE INVENTION:

The combination of security against side leakage and breathability is by the present invention achieved by means of the side flaps extending from the long sides of the absorption body being formed of a separate piece of material. The absorption body of the product lacks a liquid-impermeable back side in the parts lying outside the piece of material.

The liquid-impermeable back side which is conventionally found on absorbent products of the type which the invention concerns are the main cause of the product being felt to be airtight and sweaty. With sanitary napkins, pantyliners or protectors for light incontinent people made according to the present invention, it is possible to increase comfort without giving rise to a decreased security against leakage. How this is brought about will be described more closely in the following.

In order to minimize the risk of any body fluids which might have been absorbed outside the centre part of the product leaking out through the back side of the product,

a further hydrophobic covering layer can be arranged on the back side. Such a covering layer rejects fluid and prevents the small quantities of fluid which manage to come out to the end parts of the product from running out of the product, but still permits air circulation and the passage of water vapour out of the product.

A further effect of this is that the parts of the back side of the product, i.e. the side of the product which during use is facing away from the user, which are not covered by the separate piece of material are free from waterproof material.

Within these regions, which constitute the front and rear end parts of the product, the back side of the product consists of the surface of the absorption body which faces away from the user or of a further liquid-permeable covering layer. By the front and back end parts of the product is meant the parts lying nearest the short sides of the product and which are intended during use to be facing forwardly respectively rearwardly on the user. The end parts of the product surround its centre part. The centre part is the part of the absorption body of which the long sides are lined by the side flaps. It can be seen that the absorbent product can be roughly divided up into three parts: the centre part and the end parts constituting each one third of the full length of the product.

According to an alternative embodiment of the invention, the piece of material has a surface of absorbent material facing towards the absorption body of the product and a surface of liquid-impermeable material facing away from the absorption body of the product.

In this manner a larger absorption capacity in the region in which the absorption body of the product is overlapped

by the piece of material forming the side flaps is achieved. The region with overlapping absorption material corresponds essentially with the middle third of the absorption product seen in the longitudinal direction. As this is also the region of the product which during use shall receive and absorb the greatest part of the body fluid which is eliminated, it is extremely advantageous that this region has good absorption capacity.

Through the construction according to the invention with the side flaps which guarantee a secure fastening during use and with an increase of absorption material in the centre part of the product, the risk of leakage in the end parts of the product is minimal. It is therefore possible to leave the end parts free from liquid-barrier material and in this way allow these parts to have a high permeability for air and water vapour.

Another way of further minimizing the risk that body fluids which may have been absorbed outside the centre part of the product can leak out through the back side of the product is to mix in superabsorbents in the absorption material in the end parts of the product. By the term superabsorbents is meant such polymer absorption materials in the form of powder, particles, granules, film or such like which can absorb many times their own weight of fluid by forming an aqueous gel. Superabsorbents prevents the spreading of liquid in the absorption body by absorbing and chemically binding the fluid. In this way superabsorbents function both as an absorption material and as a barrier against leakage out from the absorbent body.

Owing to the product being equipped with side flaps which hold it in position in the underpants of the user, the product cannot slide out of its position or wrinkle up. Fluid emitted by the user will therefore meet the product in its

centre part and be absorbed by the part of the absorption body which lies between the flaps.

Because the piece of material which forms the side flaps comprises an absorption material which can lie under the absorption body of the product near the reception area for fluid, this area will have sufficient absorption capacity to be able to absorb essentially all the fluid which is received by the product during use. The absorbed body fluid will not spread out from the reception area to any noticeable extent, as the quantity of fluid is relatively small. The parts of the product which lie in the longitudinal direction outside the area surrounded by the flaps of the absorption body of the product do not therefore have to have a liquid barrier back side.

In order to prevent liquid leakage out of the side flaps it can be appropriate to arrange edge leakage barriers along the longitudinal side edges of the absorption body between these and the projecting side flaps. Such edge leakage barriers can be compression patterns of different types, produced for example through mechanical, or thermomechanical compression or by ultrasound. It is also conceivable to form edge leakage barriers through melting thermoplastic material in for example the covering layer of the product or in its absorption body by means of heat or ultrasound so that liquidproof barriers are formed between the absorption body of the product and its side flaps. The thermoplastic material can be in the form of a thermoplastic film or fibres or particles comprised in a nonwoven covering layer or mixed in the absorption body. Liquid barriers can further be produced through the application of liquid-resistant adhesive between the side flaps and the absorption body or through the incorporation of superabsorbent in the edge parts of the absorption body. Such superabsorbents bind the absorbed body fluid and in

this manner prevents it being transported out to the side flaps. A further method of achieve an obstacle for preventing body fluid passing the side edges of the product and coming out into the side flaps is to arrange slits or cuts in the absorption material along the side edges of the product.

If it is found to be appropriate it is possible to arrange corresponding liquid barriers in the direction transverse to the longitudinal direction of the product between the centre part of the product and its end parts in order to limit the spreading of fluid in the longitudinal direction of the product.

Conventional absorbent products which are equipped with side flaps are most often cut out of a running band of material formed of the different material layers comprised in the product. In this way the cutting out of the side flaps causes a comparatively large quantity of material to be lost as waste. With a product according to the invention it is however possible to cut the longitudinal components of the product out of one band of material and the piece of material which forms the side flaps out of another band of material and join the two parts together to a unit. Because the parts cut out in this way both have an essentially rectangular form, only a small quantity of material is wasted and therefore the product can be manufactured with a minimum waste of material.

It is however not necessary for the invention that the separate piece of material which forms the side flaps and the liquid barrier back side of the product are completely rectangular. With products which are intended to receive and absorb somewhat larger quantities of fluid it can be appropriate that the part of the piece of material which covers the absorption body is somewhat wider than the parts

of the piece of material which form the side flaps. In this manner a larger area of the centre part of the product is covered by the liquid-impermeable layer on the separate piece of material. In the case that the separate piece of material also comprises absorbent material such an alternative shape also adds to the absorption capacity of the product.

The invention will be described more closely in the following by means of embodiments shown in the appended Figures. The invention is not limited to the embodiments shown in the Figures but these are just intended to explain and illustrate the invention.

SHORT DESCRIPTION OF THE DRAWINGS:

Figure 1 shows a pantyliner according to the invention seen from the side of the pantyliner which during use is intended to face towards the body of the user.

Figure 2 shows the pantyliner in Figure 1 seen from the side of the liner which during use is intended to face away from the body of the user.

Figure 3 shows a cross section along the line III-III through the pantyliner shown in Figure 1.

Figure 4 shows a cross section through a pantyliner according to an embodiment which is an alternative to that shown in Figure 3.

Figures 5-11 show different shapes of the edge leakage barriers on a sanitary napkin according to the invention.

Figure 12 shows a sanitary napkin having transversely placed leakage barriers.

Figure 13 shows a sanitary napkin according to the invention seen from the side of the sanitary napkin which during use is intended to face away from the body of the user.

CLOSER DESCRIPTION OF THE DRAWINGS AND EMBODIMENTS:

The pantyliner shown in Figures 1-3 comprises an absorption body 1. The absorption body 1 has, like the pantyliner, an essentially elongated rectangular shape and is limited in plan by two long sides 2,3 and two short sides 4,5. The pantyliner further has a centre part 6 arranged in the longitudinal direction of the product between its two end parts 7,8. Each of the centre part 6 and the end parts 7,8 take up approximately one third of the length of the product.

Two side flaps 9,10 formed of a separate piece of material 11 extend out from the long sides 2,3 of the absorption body 1 on each side of the absorption body 1. The separate piece of material 11 extends transversely over the absorption body 1 at the centre part of the product and is formed of a liquid-impermeable barrier layer 12 and a layer of absorbent material 13.

The barrier layer 12 is formed of a liquid-impermeable material. Thin waterproof plastic films are suitable for this purpose but it is also possible to use material which from the beginning is liquid-permeable but which is equipped with a coating of plastic, resin or another waterproof material. In this way leakage of fluid from the underside of the absorbent product is prevented. Barrier layer 12 can naturally be formed of any sort of material which fulfils the criteria of liquid-impermeability and which has a sufficient flexibility and lack of irritation to the skin for this purpose. Examples of materials suitable as a barrier layer are plastic films, nonwovens

and laminates of these. The plastic film can for example be polyethylene, polypropene or polyester. The barrier layer can alternatively be formed of a laminate of a liquid-impermeable plastic layer which faces towards the absorption body and a nonwoven facing towards the underclothes of the user. Such a construction gives a leakage-proof barrier layer with the feel of a textile.

The absorption layer 13 is suitably formed from cellulose pulp just like the absorption body 1 of the pantyliner. This is obtainable in rolls, bales or sheets which are dry-defibrated and transferred in the fluffed form to a web of pulp occasionally with the inclusion of so-called superabsorbents which as described earlier are polymers with the ability to absorb several times their own weight of water or body fluids. Examples of other usable materials are different types of natural fibres such as cotton fibre, peat or the like. It is naturally also possible to use absorbent synthetic fibres or a mixture of natural fibres and synthetic fibres. The absorption material can further comprise further components, such as shape-stabilizing means, fluid-spreading means or binding material such as for example thermoplastic fibres which are heat-treated to hold together short fibres and particles to form a coherent unit. It is also known to use different types of absorbent foam material in the absorption body.

The absorption body 1 can be considered to be formed of a porous, loosely held together material or of a more compact absorption material with good holding together properties. In the case that a more porous material is chosen the side of the absorption body 1 which during use is intended to face towards the underpants of the user should be covered by a covering layer of e.g. nonwoven. This is so that the absorption body should hold together and not disintegrate

or form lumps during use. If the absorption body at the end parts of the pantyliner does not have a special outer material layer it puts special requirements on the absorption material. This must then be made of a material with a high abrasion resistance and good integrity, i.e. ability to stay together in the dry condition and preferably even in the wet condition. Examples of absorption material with high abrasion resistance are polymer foam materials, bound absorbent nonwoven material and pulp with blended-in binding means.

The piece of material 11 is fastened to the absorption body 1 of the pantyliner, for example by being glued, welded or sewn and has the absorption layer 13 facing towards the absorption body 1 of the pantyliner and has the liquid-impermeable barrier layer against the back side 14 of the pantyliner away from the absorption body 1. Figure 2 shows the liquid-impermeable barrier layer 12 as a dashed surface on the back side of the pantyliner.

Figure 13 shows an alternative shaping of the piece of material 11. The Figure shows a sanitary napkin having a piece of material of essentially rhombic form, where the two diametrically lying corners are formed of the side flaps 9,10 and the other two diametrically lying corners form flaps 27,28 which extend towards or partially over the end parts 7 and 8 of the sanitary napkin. Whether these flaps 27,28 on the piece of material 11 according to this embodiment extend in over the end parts 7,8, is dependent on the definition of the centre part 6 and the end parts 7,8 and on the size relationships of the sanitary napkin.

Because the flaps 27,28 of the piece of material 11 cover a large part of the back side of the napkin it follows as a consequence of this that a large part of the back side of the absorption body 1 will be covered by a liquid-

impermeable barrier layer 12, which gives an increase of the security against leakage. In the case that the piece of material 11 also comprises an absorption layer 13 there is also an increased absorption ability in these regions which in itself also contributes to an increased security against leakage.

The absorption body 1 of the pantyliner is covered by a surface layer 15 arranged over the surface of the absorption body 1 facing towards the user during use. The material in the surface layer can for example be a perforated plastic film, a net of plastic or textile material, a nonwoven or a laminate of for example a plastic layer and nonwoven layer. The plastic can be a thermoplastic, for example polythene. The nonwoven material can be of natural fibres, such as cellulose or cotton, or synthetic fibres, such as polythene, polypropene, polyester, polyurethane, nylon or regenerated cellulose.

The main function of the top layer 15 in the pantyliner is to lead fluid into the absorption body 1, to be soft and comfortable against the body of the user, and to prevent so-called rewetting, i.e. that absorbed body fluid is forced back towards the skin of the user. It is important for the sake of comfort and in order to prevent skin irritations that the surface on the part of the pantyliner which lies in contact with the skin of the user should be held as dry as possible during use. A dry surface on the pantyliner is experienced furthermore by the user as being cooler and more comfortable during use and when the pantyliner is to be changed it is more attractive to look at and to manipulate than a soiled wet surface.

If the absorption layer 13 comprised in the piece of material 11 is made of hard wearing material with good coherency, the surface layer 15 does not need to cover the

part of the piece of material 11 which forms the side flaps 9,10. However, in the Figures the surface layer 15 extends over both the surface of the pantyliner and the side flaps 9,10.

Each of the side flaps 9,10 is equipped with an attachment means 16,17 for attachment of the pantyliner in the underpants of the user. The attachment means are formed from a surface of self-adhesive glue, but as mentioned earlier the attachment means can be of any other type, such as Velcro®, clips, buttons or similar. When the pantyliner is to be used the side flaps 9,10 are folded around the leg edges on the underpants of the user and fastened with the help of the attachment means 16,17 against the material on the outside of the crotch part of the underpants.

It is naturally possible to conceive a series of further usable patterns for the attachment glue in addition to that shown in Figure 2. The attachment glue can further be used in order to control and check the liquid-permeability of the back side of the product in the region which is not covered by the liquid-impermeable barrier layer of the separate piece of material.

Figure 4 shows an embodiment which is an alternative to that shown in Figure 3. In the embodiment according to Figure 4 the piece of material consists only of a barrier layer 12. The absorbent material layer 13 has been left out. This embodiment is most suitable for products intended for an extremely limited flow of body fluids, such as pantyliners for discharges between menstruations.

As mentioned previously the absorption body is equipped with edge leakage barriers 18 in order to prevent leakage out onto the flaps. Different appearances of these barriers are shown in Figures 5-11. The edge leakage barriers can

extend along the whole length of the absorption body but they can also only cover the region between the flaps.

Figures 5 and 8 show edge leakage barriers 18 having a sinusoidal shape. Figure 6 shows edge leakage barriers with two different alternating repeating patterns. A sinusoidal wave shape 19 is interrupted by a curved section 20 on the edge leakage barrier 18. The edge leakage barriers 18 shown in Figure 7 have only curved portions 20. Figure 9 shows edge leakage barriers 18 with an interrupted pattern. Each interrupted part has an S-shape 21. These S-shaped portions 21 lie somewhat overlapping in an essentially straight row one after another forming together the edge leakage barrier 18. Figures 10 and 11 also show edge leakage barriers with interrupted patterns. In Figure 10 the edge leakage barriers 18 comprise a repeating design of somewhat overlapping semicircles 22. In Figure 11 the edge leakage barriers 18 are formed of a repeating pattern with an E-shaped appearance 23. The E-shaped portions 23 lie overlapping so that the openings alternatively face towards the edge 24 of the napkin and alternatively towards the centre 25 of the napkin.

The absorbent product can on the side intended to be facing towards the body of the user also be equipped with leakage barriers placed transversely in order to prevent spreading in the longitudinal direction of the product.

Figure 12 shows how leakage barriers 26 can also be placed transversely on a sanitary napkin. In the Figure the same pattern 22 as used in Figure 10 for edge leakage barriers 18 is shown. It is merely one example. Naturally all the patterns which are suitable as edge leakage barriers 18 and which are shown in Figures 5-11 are equally suitable as

transverse leakage barriers 26 with the same appearance as the edge leakage barriers 18.

The transverse leakage barriers are suitably placed aligned with the side flaps 9,10 where they go out from the absorption body 1, i.e. two transverse leakage barriers enclose the part of the pantyliner which on the opposing surface is equipped with a liquid barrier material, on the surface which is intended to face towards the user. The leakage barriers are also arranged on both sides of the separate piece of material. If the piece of material has a shape other than that shown in the Figures the leakage barriers appropriately follow that shape.

The patterns which are given above as possibilities for leakage barriers are only examples. Many other patterns are conceivable. The main criteria for functioning of the pattern is naturally that it prevents liquid from spreading out past the pattern and that it does not make the product too stiff or chafe the user. With the help of such patterns as described in the Figures other purposes can be achieved apart from leakage security. They can stiffen the product where this is required or they can shape the product, for example give it a three-dimensional shape.

Even if the invention in the above has for the sake of simplicity been described with reference to a pantyliner, it is naturally possible that the embodiments shown could equally likely have shown light incontinence protectors, mini-napkins or similar absorbent products which are under the scope of the invention.

CLAIMS

1. Absorbent product, such as a sanitary napkin, a pantyliner or a protector for light incontinent people, intended to be worn in the crotch part inside a pair of underpants, which product has essentially elongated shape and has two long sides (2,3), two short sides (4,5), two end parts (7,8) and a centre part (6) lying between the end parts and comprising an elongated absorption body (1) and a flexible side flap (9,10) arranged at each of the long sides (2,3) of the product which side flaps (9,10) during use are intended to be applied around the leg edges of the underpants, characterized in that the side flaps (9,10) are formed of a separate piece of material (11) which extends transversely over the absorption body (1) at the centre region (6) of the product and projects out from the long sides (2,3) of the absorption body (1) on both sides of the absorption body (1), wherein the separate piece of material (11) comprises at least one liquid-impermeable barrier layer (12) applied to the side of the piece of material (11) which faces away from the absorption body (1) of the product.

2. Absorbent product according to Claim 1, characterized in that the piece of material has a layer of absorbent material (13) applied on the side of the piece of material (11) which faces towards the absorption body.

3. Absorbent product according to Claims 1-2, characterized in that the surfaces of the absorption body (1) of the product which are not covered by the piece of material (11) are at least partially covered by a liquid-permeable surface layer.

4. Absorbent product according to Claim 3, characterized in that the liquid-permeable layer (12) is arranged on the

side of the product which has the liquid-permeable surface layer.

5. Absorbent product according to Claims 3-4, characterized in that the liquid-permeable surface layer is arranged on the side of the product which does not have the liquid-impermeable layer.

6. Absorbent product according to any of Claims 3-5, characterized in that the liquid-permeable surface layer is arranged on both sides of the product.

7. Absorbent product according to any of the above claims, characterized in that the edges on the long sides of the elongated absorption body have edge leakage barriers (18).

8. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of longitudinal compressions.

9. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of fused fibres in the covering layer.

10. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of fused fibres in the absorption body.

11. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of water-insoluble adhesive applied between the side flaps and the absorption body.

12. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of

super-absorbent material mixed in the longitudinal edge parts of the absorption body.

13. Absorbent product according to Claim 7, characterized in that edge leakage barriers (18) are comprised of slits arranged in the side edges of the absorption material.

14. Absorbent product according to Claim 1-6, characterized in that it has transverse the longitudinal direction of the product leakage barriers (26) between the centre part of the product and the end parts of it, in order to limit spreading of fluid in the longitudinal direction of the product.

15. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of compressions.

16. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of fused fibres in the covering layer.

17. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of fused fibres in the absorption body.

18. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of water-insoluble adhesive.

19. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of superabsorbent material mixed into the absorption body.

20. Absorbent product according to Claim 7, characterized in that the leakage barriers (26) are comprised of slits.

21. Absorbent product according to any one of the previous claims, **characterized in** that the end parts of the absorption body comprise mixed-in superabsorbent.

22. Absorbent product according to any one of the previous claims, **characterized in** that the piece of material (11) has flaps (27,28) which extend towards, or partially cover, the end parts (7,8) of the sanitary napkin.

23. Absorbent product as claimed in claim 1 substantially as hereinbefore described with reference to and as illustrated in any one of Figures 1 to 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 or 13 of the accompanying drawings.

The Patent Office

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Application No: GB 9622992.7 **Examiner:** Jon Broughton
Claims searched: 1-23 **Date of search:** 20 January 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): A5R (RPF, RPG)

Int Cl (Ed.6): A61F 13/15, 13/46

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	GB 2227174 A	(KAO CORPORATION) see figures 1-4 and page 11 lines 2-10	1-6
X	EP 0467184 A1	(McNEIL-PPC INC.) see column 4 lines 7-18 and lines 51-58, and figures 1, 4 and 6.	1, 3, 4, 5, 6
X	EP 0130848 A2	((THE PROCTER AND GAMBLE COMPANY) see page 16 line 28 - page 18 line 13, and figures 9 and 10.	1, 2, 3, 4, 5
X, P	WO 96/00546 A1	(THE PROCTER AND GAMBLE COMPANY) see page 9 lines 29-36, page 10 lines 23-25, page 11 lines 1-8 and lines 19-27, and figure 1.	1, 2, 4, 5
X	WO 94/27542 A1	(THE PROCTER AND GAMBLE COMPANY) see page 17 lines 11-21, page 18 lines 9-12, page 24 lines 1-7 and figure 2A	1-4
X	US 4900320	(McNEIL-PPC INC.) see column 4 lines 15-20 and lines 54-68, column 6 lines 16-36 and column 7 lines 5-11.	1, 3, 4, 5, 6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
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